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MEETING NOTES

TO: Distribution

DATE: January 18, 1994

FROM: Philip Nixon

MEMO #: SP307:012194:01

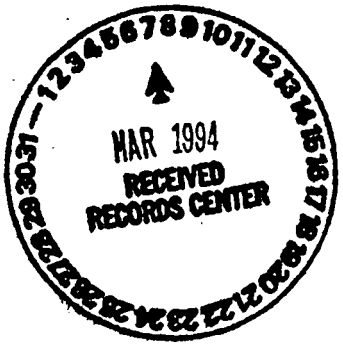
PROJECT #: Solar Pond IM/IRA

ATTENDANCE:

Randy Ogg, EG&G
Harlen Ainscough, CDH
Phil Nixon, ES
Richard Henry, ES
Andy Ledford, EG&G
Alan MacGregor, ERM
Dave Ericson, EG&G
Scott Surouchak, DOE
Peg Witherill, DOE
Ted Kearns, DOE/KMI
Steve Paris, EG&G
Lee Pivonka, G&M
Steve Cullen, G&M
Mark Austin, EG&G

DISTRIBUTION:

Attendees
L. Benson, ES
A. Conklin, ES
P. Breen, ES
H. Heidkamp, ES
K. Cutter, ES
S. Stenseng, ES
A. Fricke, ES
T. Kuykendall, ES
T. Evans, ES
B. Cropper, ES
C. Montes, ES
R. McConn, ES
W. Edmonson, ES
B. Wallace EG&G (Admin. Record) (2)
K. London, EG&G
Martin McBride, DOE
Helen Belencan, DOE
Steve Cooke, EG&G
Joe Schieffelin, CDH
Bob Segris, LATO
Steve Keith, EG&G
Dave Myers, ES
R. Wilkinson, ES
S. Winston, ES
Frazer Lockhart, DOE
Kim Ruger, EG&G
Michelle McKee, EG&G
Marcia Dibiasi, IGO
Steve Howard, DOE/SMS
Rich Stegen, ES
Cindy Gee, ES



DOCUMENT CLASSIFICATION REVIEW WAIVER PER CLASSIFICATION OFFICE

ADMIN RECORD

A-0U04-000661

SUBJECT: Weekly Status Meeting

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1) Review of Meeting Minutes

The meeting minutes from January 11, 1993 did not reflect that Harlen Ainscough provided comments on the HELP model and the Phase II workplan. **Richard Henry of ES needs to discuss these comments with Harlen Ainscough.**

2) Baseline Overview

Phil Nixon presented the approach that was take to evaluate the issue of the potential for the water table elevation to rise to a level that may contact the B-Series SEP liners. ES evaluated this issue by addressing two activities:

1. Re-evaluation of the engineered cover configuration.

2. Evaluation of the potential for COCs to leach from the soils and liners.

Sandy Stenseng presented the results of the engineering evaluation. She first calculated whether the total volume of liners/media could be consolidated within SEP 207-A. The results of this analysis indicated that the engineered cover would have a peak height of 37 feet if all liners/media were consolidated in SEP 207-A. This would present side slope problems and would put excessive stress/loading on the north hillside.

Sandy presented a reconfigured engineered cover that was 13,000 square feet smaller than the previously proposed engineered cover. The engineered cover would be constructed over primarily SEP 207-A with a portion of the engineered cover extending over the B-Series Ponds. The liners from the B-Series Ponds will be excavated, crushed, and placed on top of an artificial vadose zone to provide protection from a potential rising water table and to minimize differential settlement. The artificial vadose zone will be comprised of media from the hillside and buffer zone that has COC concentrations less than surface soil and vadose zone PRGs, and is expected to be protective with respect to leaching. The artificial vadose zone would extend to the elevation of the bottom of SEP 207-A so that the liners would all be placed at the same elevation. Sandy pointed out that all the liners would be excavated, crushed, and mixed with soil so that the required compaction could be achieved.

The liners from SEP 207-C will be excavated and consolidated beneath the 1000-year engineered cover. The conceptual design will assume that the contaminated media under C-Pond will remain in place under an engineered cover that meets the requirements of the Colorado hazardous waste management regulations. Contaminated media from the surrounding OU4 area may be consolidated under the SEP 207-C engineered cover.

Harlen Ainscough specified that there might be public uncertainty with respect to having two different engineered covers with similar concentrations of contaminated media beneath

them. Randy Ogg stated that this design was in compliance with the Colorado regulatory requirements, since only the "hazardous waste" liners required 1000 year protection. Harlen agreed, but indicated that this might be a point of public contention. Harlen urged DOE to clean close the SEP 207-C if possible to prevent this issue from becoming a point of public contention. It was agreed that EG&G wanted to clean close SEP 207-C, but did not yet have the data to determine if it were feasible. Phil Nixon presented a graph that would be in Part IV of the IM/IRA which illustrated DOEs decision-making flowpath to evaluate the potential for clean-closing SEP 207-C. Andy Ledford indicated that DOE had expressed an interest in providing a design that was expected to be protective for 1000 years so that public confidence could be achieved. It was decided that DOE would assume at this time that the SEP 207-C would require an engineered cover.

It was agreed that DOE was only expected to remediate soils above the historical high level of the ground water table under the IM/IRA. The level of the saturated zone could include the region that is seasonally saturated as the ground water table rises. This means that the zone of soil from the normal water table elevation to the seasonal high elevation will be considered saturated (non-vadose zone). Therefore this layer does not have to be excavated or considered as part of the IM/IRA closure/remediation.

Leigh Benson presented preliminary results from the VLEACH model that was used to assess the potential for COC leaching from liners/media. Leigh indicated that conservative assumptions and input data were used to over estimate the amount of leachate that could be generated. Specific COCs were included in the model based on their toxicity, mobility, and measured concentrations within OU4. The maximum COC concentration was used at each depth for each model area. Leigh modeled 3 scenarios:

1) No-action
2) Hakonson cover (without the asphalt impermeable layer)
3) 1000-year design (including the asphalt impermeable layer)

Amy Conklin specified that the results (straight leachate without ground water mixing/dilution) were preliminarily compared to the following promulgated standards for illustrative purpose only:

1) Colorado Primary Drinking Water Standards or maximum concentration level (MCLs)
2) Federal MCLs

Promulgated standards would be the preferred comparison criteria with the risk-based PRGs for ground water being utilized as a secondary comparison criteria. Additional PRGs may have to be calculated for modeled COCs if promulgated standards do not exist.

The results of the leaching modeling indicate that only the organic COCs may leach at concentrations that may not be protective of ground water for the no-action general response action; however, these results are based upon the suspect historical data, and do not take into account any mixing/dilution by ground water. The results of this analysis indicated that the OU4 SEPs are not likely to be a significant source of ground water

contamination. In addition, the previously-calculated PRGs are likely to be protective of ground water since soils at concentrations greater than the PRGs showed leaching model results that were protective of ground water.

Harlen Ainscough indicated that CDH was concerned that future climatic change could cause the regional water table to rise and contact the hazardous waste. Steve Cullen indicated that even small fluctuations in the water table elevation are large with respect to the amount of vadose zone under the OU4 SEPs. It was determined that this issue could be addressed by four mechanisms:

1) Assume 4-feet of artificially created vadose zone is adequate.

2) Provide hydrogeological modeling to predict the maximum potential water table rise.

3) Physical analysis of the COC leaching potential.

4) Design an engineered solution.

It was agreed that option 1 could not be justified. Options 2 and 3 were reasonable approaches that could provide significant results. Harlen Ainscough indicated that option 4 was the most fail safe alternative, but that options 2 and 3 could be used as a secondary line of defense for a potential failure of an engineered solution. However, it would take at least 1 to 3 months to received results. ES was asked to investigate how other closure sites in Colorado (particularly the Martin Marietta site) addressed the issues of a potential rise in the ground water level.

ES was directed to provide an engineering solution to prevent rising ground water from contacting the hazardous waste liners.

ES presented a conceptual sketch for a subsurface drain that would become the future high water table level. **Harlen Ainscough was asked to review this design with his CDH colleagues and provide comments or concurrence at the next team meeting that contaminated media at concentrations exceeding PRGs could be used as backfill beneath the subsurface drainage layer to expand the vadose zone.**

3) Distribution of Post-Closure Monitoring and Assessment Plan Annotated Outline.

Lee Pivonka distributed an annotated outline for the post-closure monitoring and assessment plan and a revised version of the post-closure monitoring design criteria. **The team was asked to review and comment on these documents by the next team meeting.**

4) Open Issues

Becky Cropper reported that there were mobile laboratories that could provide level 4 and 5 analytical results in turn-around times that should not exceed 24 hours. Andy Ledford requested that the turn-around time be considered in the construction schedule.

Andy Ledford indicated that EG&G would make every attempt to expedite the construction schedule and specified that the design team should realize that construction may be performed by 3 shifts per day.

Philip Nixon, Project Manager

Attachment 1
SP307:012194:01
Page 1 of 1

OPERABLE UNIT 4/SOLAR EVAPORATION PONDS

JANUARY 25, 1994

AGENDA

MEETING MINUTES REVIEW	8:00 - 8:15
MEETING MINUTES COMMENTS/ ISSUE RESOLUTION	8:15 - 8:30
IM/IRA PACKAGE OVERVIEW - ES	8:30 - 8:45
STATUS OF BUILDING 788 - KEARNS	8:45 - 9:30
COMMENTS ON ANNOTATED POST CLOSURE MONITORING PLAN AND DESIGN CRITERIA - G&M	9:30 - 10:00
BREAK	10:00 - 10:15
COMMENCEMENT OF FIELD ACTIVITIES PRIOR TO FINAL IM/IRA DD APPROVAL - LEDFORD	10:15 - 11:00
ABILITY TO COMMENCE EARTHWORK	
CONSTRUCTION OF SECURITY FENCE	
REMOVAL OF EXISTING UTILITIES	
RELOCATION OF UTILITIES	
CONCURRENCE OF DESIGN CRITERIA - AUSTIN	11:00 - 11:15
TREATMENT OF CONCRETE FOUNDATIONS	
OU-4 BOUNDARY - CLEAN INSIDE OU-4 BOUNDARY ONLY	
OPEN ISSUES	11:15 - 12:00

COLORADO DEPARTMENT OF HEALTH
Hazardous Materials and Waste Management Division

INTEROFFICE COMMUNICATION

TO: Harlen Ainscough

FROM: Wendy Naugle WN

DATE: January 10, 1994

SUBJECT: HELP Model Input for Solar Ponds Cover Design

Harlen, as you requested, I have reviewed the input parameters for the HELP model simulations of the Solar Ponds Cover design. I have several comments, which are listed below.

General Comments regarding the use of the HELP model:

Use of the HELP model has many limitations. Therefore, it is extremely important to ascertain more definitively how the results will be used. If the model is to be used in conjunction with other models to confirm that the cover designs is appropriate, then the use of the HELP model is most likely merited. However, if the results from the HELP model runs will be used in a stand-alone fashion to predict the absolute leakage out the existing liner layers, I do not believe this model is appropriate by itself.

Since the cover design life is 1000-years, the HELP model may not be appropriate due to the fact that typically only 20-years are modeled. Climatic variation beyond a 20-year period will not be predicted or accounted for using the input parameters proposed in this document.

Given the unique situations presented in this case, including the 1000-year design life, the inclusion of a capillary break, inclusion of an asphalt layer, and inclusion of the existing liners in the model domain, the application of the HELP model to this situation is a bit beyond its capabilities, especially when using "default" model values for these layers.

General Comments regarding the model domain:

For both cover design scenarios, it is proposed to model the entire cover from the vegetative layer all the way down to the existing liners. In this manner, the model results will predict percolation from the liner layer only. Thus, the model results will be most strongly influence by the following factors: evapotranspiration from the upper two layers (strongly dependent upon the soil parameters and the thickness of the layers), lateral drainage from the sand layer beneath the capillary break (dependent upon the slope of the layer, the saturated hydraulic conductivity and the maximum lateral drainage distance) and the leakage through the existing liner (dependent upon the saturated hydraulic conductivity of the layer

and its thickness). In other words, inclusion of all three of the above mentioned layers in the model domain, using normal climatic values as proposed, will most likely result in model output that indicates no leakage through the existing liner. [I ran the model to simulate the first 20 years, and basically confirmed this result -- the majority of the water will leave the system through Et, a small amount will escape via lateral drainage, and after three years of simulation, very small amounts of water percolate through liner layer.]

Specific Comments:

Depending upon the continuity of the existing liner, and the amount of backfill needed to reach "final grade" it may not be appropriate to model these two layers together. This is particularly important if there will be areas beneath the cover where the existing liner is absent. The saturated hydraulic conductivity of the backfill may not be as low as 1×10^{-7} cm/sec, and the thickness of this layer will exert a large degree of control on the output.

Use of default values for the soils in each layer is not appropriate. Actual values should be determined for the material to be used for layers 1, 2, and 7, at a minimum.

The initial soil moisture content for layers 1 and 2 should probably be higher than the field capacity, unless they have data to prove otherwise.

Other input parameters not given which should be reviewed by CDH:

thickness of the existing liner layer
initial quantity of water on the soil surface (snow depth)
vegetation type
slope of the drain layer
Soil Conservation Service runoff curve number
surface area
lateral drainage distance

As a result of these comments I suggest that you request the following:

- clarification of what the results of the model will be used for
- additional information regarding the specific soil types that will be used in the construction
- additional information listed above under "Other input parameters not given"
- that a method be developed to assess the impact of climatic variations over the 1000-year design life (whether by sensitivity analysis, or through synthetic climate generation to simulate a wetter 20-year period, or another method/model.)

Informal comments on outline of Phase II Workplan component of OU-4 IM/IRA DD
Provided to IM/IRA Team 1/11/94

General: Need Acronyms List in IM/IRA

A Benchmarks section with tables may need to be added to establish analytical detection limits for ground water samples. It is unlikely the ARARs section of the IM/IRA can be referenced since this workplan is for groundwater.

The workplan, per IAG Table 5, must characterize nature, rate and extent of contamination, define pathways and methods of migration, identify areas that would be threatened by releases, and determine short/long term effects on human health and the environment. Please be sure that these basic objects can be meet from the data to be gathered under the WP.

Section 2.0: Reference as much as possible to information in the introductory section of the IM/IRA. However avoid references that would require back and forth comparisons of information, i. e. especially maps.

A map showing the bedrock topography and surficial bedrock lithologies, to the extent known, is desirable. If enough is known to include bedrock lithologic cross-sections please do so.

Delete preliminary Section Figures 2.1, 2.2 and 2.5 (wind rose, etc) from this workplan. They should be include in the IM/IRA introductory section.

Section 5: Regarding 5.1, please specify the determinations that will be supported by the data to be collected. For example, the extent to determine vertical ground water movement, head differences between alluvium and bedrock, vertical hydraulic conductivity, etc., should be stated as appropriate.

Regarding 5.2, explain the need/desire for additional surficial soil samples. Are they being taken at hole/well locations or elsewhere as well.

What seep specific investigations are proposed? Are they alluded to in Section 5.4, surface water sampling?

Section 7.1&7.2:

Per the IAG a comprehensive risk assessment must be developed in the Phase II Report. It is recognized that the solar ponds themselves had little ecology and the closure action would likely change any current impacts to humans or ecology. However, there must be an assessment of the impacts to HH & the environment if no further actions are taken in regard to past releases to

ground water and that may continue to impact surface water. Therefore, DOE must still develop a Phase II work plan (or utilize the Phase I workplan, with modifications, if necessary) to ensure that the assessment can be accomplished. Please minimize the degree of effort yet meet the objective of a comprehensive assessment.